

**REMARKS**

Claims 1 to 2, 7 and 9 were rejected under 35 U.S.C. §102(e) as anticipated by Goebel et al. (US 6, 838, 062 B2). Claims 3 to 6 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Goebel et al., as applied to claim 1 above, and in further view of Chludzinski et al. (US 4, 473, 622). Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reconsideration of the application based on the following remarks is respectfully requested.

**35 U.S.C. 102 Rejections**

Claims 1 to 2, 7 and 9 were rejected under 35 U.S.C. §102(e) as anticipated by Goebel et al. (US 6, 838, 062 B2).

Goebel et al. discloses

a fuel processor for rapid start and operational control. The fuel processor includes a reformer, a shift reactor, and a preferential oxidation reactor for deriving hydrogen for use in creating electricity in a plurality of H<sub>2</sub>-O<sub>2</sub> fuel cells. A heating or cooling mechanism, as required, is coupled to at least the shift reactor for controlling the critical temperature operation of the shift reactor without the need for a separate cooling loop. This heating mechanism produces thermal energy as a product of combustion of air and fuel. (Col. 3, Lines 10 to 18).

Claim 1 recites “a reactor system for producing hydrogen from a hydrocarbon or hydrocarbon derivative using autothermal reformation, comprising:

a mixture formation chamber configured to form a mixture of the hydrocarbon or hydrocarbon derivative with water and air;

an autothermal reactor configured for simultaneous oxidation and steam reformation of the mixture, the autothermal reactor including a catalyst material; and

a temperature-regulated start-up burner including a burner unit configured to combust the hydrocarbon or hydrocarbon derivative with air so as to heat at least one of the mixture formation chamber and the autothermal reactor to a respective operating temperature, the start-up burner being configured to meter an air supply to a mixing zone where air of the air supply is mixed with hot gas coming out of the burner unit so as to regulate a temperature of

hot gas coming out of the start-up burner to a value near or below a deterioration temperature of the catalyst material, before the hot gas contacts the at least one of the mixture formation chamber and the autothermal reactor.”

In Goebel, the inlet clearly is not the claimed mixing zone as the Office Action on page 2 already admits that the inlet is the claimed mixture formation chamber. Furthermore, the air supply 36 is not mixed with hot gas coming out of the burner unit prior to “contacting the at least one of the mixture formation chambers” as claimed, but rather enters into the heat exchanger and combines in the alleged mixture formation chamber. See Goebel, Fig. 1 for example. Goebel thus does not show “a mixing zone where air of the air supply is mixed with hot gas coming out of the burner unit so as to regulate a temperature of hot gas coming out of the start-up burner to a value near or below a deterioration temperature of the catalyst material, before the hot gas contacts the at least one of the mixture formation chamber and the autothermal reactor.”

Withdrawal of this rejection to claims 1, 2, 7 and 9 is respectfully requested.

#### 35 U.S.C. §103 Rejections

Claims 3 to 6 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Goebel et al., as applied to claim 1 above, and in further view of Chludzinski et al. (US 4, 473, 622).

As Chludzinski et al. is relied upon for its alleged disclosure of the additional features of dependent claims 3 to 6 and 10, it cannot cure the deficiencies in Goebel et al. discussed above with regard to claim 1.

Withdrawal of the rejections under 35 U.S.C. §103(a) is therefore respectfully requested.

#### Allowable Subject Matter

Claim 8 was objected to as being dependent upon a rejected base claim but was indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In light of the above, withdrawal of the objections to claim 8 is respectfully requested.

**CONCLUSION**

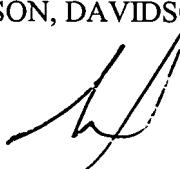
It is respectfully submitted that the application is in condition for allowance and applicants respectfully request such action.

If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

Respectfully submitted,

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